

Claims

What is claimed is:

1. A system for dispensing resist, comprising:
a reservoir;
a nozzle in fluid communication with the reservoir; and
a return line in fluid communication with the reservoir;
wherein the nozzle is moveable between first and second positions;
in the first position, the nozzle is positioned to dispense liquid from the
reservoir onto a substrate; and
in the second position the nozzle is positioned to dispense liquid from
the reservoir into the return line.
2. The system of claim 1, the return line has a coupling with a shape
complementary to that of the nozzle and the nozzle is fit into the coupling when the
nozzle is in the second position.
3. The system of claim 2, the reservoir is below the return line coupling.
4. The system of claim 1, the reservoir has a port out which gas released
from liquid in the reservoir is exhausted.
5. The system of claim 1, the nozzle has a tip approximately in the shape
of a truncated cone and a circumference of the cone at its base is at least about 10
times a circumference of the cone where it is truncated.
6. The system of claim 1 wherein the nozzle has a tip approximately in
the shape of a truncated cone, the tip has an orifice on the truncated end, and a
circumference of the cone at its base is at least about 10 times a circumference of the
orifice.
7. The system of claim 1, wherein the return line has a trap.

8. The system of claim 1, the return line exhausts into a holding tank that is separate from the reservoir.

9. The system of claim 1, wherein the reservoir contains a resist solution.

5 10. The system of claim 1, wherein the return line is capped when the nozzle is in the first position.

11. The system of claim 1, further comprising a pump that pumps fluid from the reservoir to the nozzle and a fluid from the return line flows into the reservoir by the action of gravity.

10 12. The system of claim 11, a residence time of resist within the return line is less than about 10 minutes.

13. A system for dispensing resist solution, comprising:
a reservoir for containing resist solution;
means for dispensing resist solution from the reservoir onto a substrate; and
means for capturing resist solution dispensed by the dispensing means and
15 returning the dispensed fluid to the reservoir.

14. A method of dispensing resist, comprising:
drawing resist from a reservoir;
dispensing resist through a dispense head onto a substrate;
dummy dispensing resist to mitigate residues on the dispense head;
20 capturing dummy dispensed resist; and
returning dummy dispensed resist to the reservoir.

15. The method of claim 14, the dummy dispensed resist is captured by coupling the dispense head with a return line.

16. The method of claim 15, an atmosphere through which dummy dispensed resist flows is substantially saturated with vapor from the resist solution.

17. The method of claim 14, the dummy dispensed resist is filtered shortly after it is captured.

5 18. The method of claim 14, the dummy dispensed resist is immediately returned to the reservoir.

19. The method of claim 14, further comprising adding solvent to the dummy dispensed resist before returning the dummy dispensed resist to the reservoir.

10 20. The method of claim 14, further comprising testing the dummy dispensed resist before returning it to the reservoir.